

Titles

- Antennas for Amateur Radio Interferometers, *G. W. Swenson, Jr.*, 338
- Artist's Astronomical Odyssey, *An, Henk Pander*, 7
- Astrophotography with Unsharp Masking, *David F. Malin and William J. Zealey*, 354 (correction, 445)
- Atkinson Sundial at Indiana University, *The, Hugh C. Hazelrigg*, 138
- Bumper Crop of License Plates, *A*, 535
- Committee of 10, *The, Jeanne E. Bishop*, 212
- Dateline: Jupiter, *J. Kelly Beatty*, 346 (correction, 445)
- Early Reports on the Solar Eclipse, 344
- Eclipse in the Northwest, *The*, 431
- E. E. Barnard and the Comet-Seeker Hoax of 1891, *John Lankford*, 420
- Encounters with Venus, *J. Kelly Beatty*, December, 1978; correction to, 170
- ESA Update: Spacelab and Ariane, *R. S. Lewis*, 217
- Events of 1979 in the Graphic Time Table, 55
- Examining Planet Earth, *Norman Sperling*, 126
- Exposing the Analemma, *Dennis di Cicco*, 536
- Far-Out Worlds of Voyager 1, *The, J. Kelly Beatty*, I, 423; II, 516
- Filters To Pierce the Nighttime Veil, *Dennis di Cicco*, 231
- Is M82 Really Exploding? *Philip Morrison*, 26
- IUE and the Search for a Lukewarm Corona, *Jay M. Pasachoff, Jeffrey L. Linsky, Bernhard M. Haisch, and Albert Boggess*, 438
- Ken Mattingly Planetarium, *Doug Gegen and Erik Simonsen*, 336
- Laboratory Exercises in Astronomy — Cepheid Variables and the Cosmic Distance Scale, *Jay M. Pasachoff and Ronald W. Goebel*, 241
- Making It in Monterey, *Dennis Overbye*, 223
- Measuring Radial Velocities with an Objective Prism, *Frank Giesekeing*, 142
- Mutual Occultations of Planets: 1557 to 2230, *Steven C. Albers*, 220
- Mystery of Vega, *The, Wieslaw Z. Wisniewski and Harold L. Johnson*, 4
- Observatoire Astronomique du Québec, *L', Serge Demers*, 215
- On Teaching Observational Astronomy, *Dennis di Cicco*, 19
- Organic Clues in Carbonaceous Meteorites, *Charles R. Pellegrino and Jesse A. Stoff*, 330
- Partial Phases of February's Solar Eclipse, 36
- Pioneer Venus: A First Report, *Jim Loudon*, 119
- Project: Universe, *David A. Pierce*, 24
- Solid Particles in Space, *R. F. Knacke*, 347
- Soviet RATAN-600 Radio Telescope, *The, D. V. Korolkov and Yu. N. Pariiskii*, 324
- Space News Roundup, *J. Kelly Beatty*, 237
- Space Shuttle: Problems and Progress, *J. Kelly Beatty*, 542
- Starmaking with Colliding Molecular Clouds, *Robert B. Loren and Frederick J. Vrba*, 521
- Star Struck, *Lucille Ruga*, 245
- Strange RS Canum Venaticorum Binary Stars, *The, Michael Zeilik, Douglas S. Hall, Paul A. Feldman, and Frederick Walter*, 132
- Tale of Two Eclipses, *A, Laurence A. Marschall*, 116
- Testing Gravity in a Binary Pulsar, *Dennis Overbye*, 146
- Ultimate Fate of the Universe, *The, Jamal N. Islam*, 13
- Video Techniques in Comet-Debris Studies, *Peter M. Millman and K. Stuart Clifton*, 21
- Visit to Paris Observatory, *A, Victor Lopez*, 239
- What Are X-Ray Bursters? *Walter H. G. Lewin and Jan van Paradijs*, 446
- X-Ray Eyes of Einstein, *The, Dennis Overbye*, 527

Authors

- Albers, Steven C.*, Mutual Occultations of Planets: 1557 to 2230, 220
- Allan, Richard P.*, Recording the Time on Astronomical Photographs, 192
- Ashbrook, Joseph*, Astronomical Scrapbook, 141, 342, 545
- Observed Eclipses of Jupiter's Satellites, 309
- Variable Star Observers Meet, 42
- Baroni, S.*, and *M. Cavagna*, letter, 34
- Barrett, Andrew*, Almost a Null Test for Paraboloids, 92
- Bartels, Melvin Lynn*, Driving a Telescope with Wood Putty, 392
- Beatty, J. Kelly*, Dateline: Jupiter, 346 (correction, 445)
- Encounters with Venus, December, 1978; correction to, 170
- Far-Out Worlds of Voyager 1, *The*, I, 423; II, 516
- Space News Roundup, 237
- Space Shuttle: Problems and Progress, 542
- Benton, William R.*, book review, 573
- Bisard, Walter J.*, letter, 35
- Bishop, Jeanne E.*, The Committee of 10, 212
- Blake, W. Russell*, letter, 33
- Boggess, Albert*, see *Pasachoff, Jay M.*
- Bortle, John E.*, Comet Digest, 32, 145, 246, 343, 445, 526
- Bowell, Edward*, book review, 173
- Brooks, Edward M.*, book review, 79
- Capen, Virginia Watkins*, book review, 383
- Cardoen, Dany*, Report of a Belgian Telescope Maker, 185
- Cavagna, M.*, see *Baroni, S.*
- Church, John A.*, The Hastings-Byrne 6¼-inch Refractor, 294
- Clifton, K. Stuart*, see *Millman, Peter M.*
- Cock, Guillermo J.*, Experiments with Vacuum-Formed Mirrors, 491
- Cohen, Nathaniel*, book review, 287
- Davidson, Gerald T.*, letter, 444
- Dawson, John M.*, letter, 333
- Demers, Serge*, L'Observatoire Astronomique du Québec, 215
- Dessler, A. J.*, letter, 333
- di Cicco, Dennis*, Airborne Eclipse Observing and the Moon's Shadow, 495
- Exposing the Analemma, 536
- Filters To Pierce the Nighttime Veil, 231
- Dischner, Brad*, A Portable 16-inch of Great Steadiness, 87
- Dunham, David W.*, Occultation Highlights for the Year 1979, 97 (correction, 202)
- Some Notes for Occultation Observers, 272
- Eddy, John A.*, book review, 473
- Federer, Charles A., Jr.*, book reviews, 385, 474
- Feldman, Paul A.*, see *Zeilik, Michael*
- Flescher, Eric Z.*, letter, 445
- Fries, Allan G.*, letter, 35
- Gavin, Maurice V.*, Aluminized Mylar as a Flux Collector, 489
- Gegen, Doug*, and *Erik Simonsen*, Ken Mattingly Planetarium, 336
- Giesekeing, Frank*, Measuring Radial Velocities with an Objective Prism, 142
- Glaser, Peter E.*, letter, 444
- Goebel, Ronald W.*, see *Pasachoff, Jay M.*
- Haisch, Bernhard M.*, see *Pasachoff, Jay M.*
- Hall, Douglas S.*, see *Zeilik, Michael*
- Hamilton, Thomas W.*, letter, 333
- Hazelrigg, Hugh C.*, The Atkinson Sundial at Indiana University, 138
- Healy, D.*, Astrophotography: Planning Pays Off, 197
- Hewitt-White, Kenneth*, book review, 570
- Hibner, D. H.*, letter, 35
- Hodgson, William Dave*, letter, 35
- Holden, Frank*, book review, 569
- Hoskin, Michael A.*, letter, 34
- Hossfield, Casper H.*, book review, 282
- Houston, Walter Scott*, Deep-Sky Wonders, 105, 203, 314, 410, 505, 601
- Irwin, John B.*, book review, 381
- Islam, Jamal N.*, The Ultimate Fate of the Universe, 13
- Johnson, Harold L.*, see *Wisniewski, Wieslaw Z.*
- Kalkofen, Wolfgang*, book review, 77
- Kearns, Mark*, letter, 245
- Knacke, R. F.*, Solid Particles in Space, 347
- Korolkov, D. V.*, and *Yu. N. Pariiskii*, The Soviet RATAN-600 Radio Telescope, 324
- Kresak, Lubor*, letter, 245
- Lankford, John*, E. E. Barnard and the Comet-Seeker Hoax of 1891, 420
- Lelfer, Burt*, An Altazimuth Observing Chair for Binoculars, 487
- Lewin, Walter H. G.*, and *Jan van Paradijs*, What Are X-Ray Bursters? 446
- Lewis, Richard S.*, ESA Update: Spacelab and Ariane, 217
- Liller, William*, book reviews, 75, 176
- Linsky, Jeffrey L.*, see *Pasachoff, Jay M.*
- Lopez, Victor*, A Visit to Paris Observatory, 239
- Loren, Robert B.*, and *Frederick J. Vrba*, Starmaking with Colliding Molecular Clouds, 521
- Loudon, Jim*, Pioneer Venus: A First Report, 119
- Lovi, George*, Rambling Through... (current month) Skies, 54, 160, 264, 368, 464, 558
- Ludington, E. Whit*, letter, 444
- Maag, Russell, C.*, letter, 444
- Macdonald, Norman*, book review, 388
- Malin, David F.*, and *William J. Zealey*, Astrophotography with Unsharp Masking, 354 (correction, 445)
- Marschall, Laurence A.*, A Tale of Two Eclipses, 116
- Marsden, Irving G.*, book review, 72
- Mathews, Robert T.*, book review, 476
- Mayer, Ben*, book review, 179
- Mayer, Ernst H.*, letter, 33
- Meeus, Jean*, book review, 284
- letter, 333
- Michaud, Michael A. G.*, book review, 471
- Millman, Peter M.*, and *K. Stuart Clifton*, Video Techniques in Comet-Debris Studies, 21
- Morrison, Philip*, Is M82 Really Exploding? 26
- Muller, Peter*, letter, 33
- Nash, Graeme*, letter, 33
- Nicholson, Oliver*, letter, 333
- Nicolini, Jean*, A Brazilian Observatory's 30th Anniversary, 154
- Overbye, Dennis*, Making It in Monterey, 223
- Testing Gravity in a Binary Pulsar, 146
- X-Ray Eyes of Einstein, *The*, 527
- Pander, Henk*, An Artist's Astronomical Odyssey, 7
- Pariiskii, Yu. N.*, see *Korolkov, D. V.*

Pasachoff, Jay M., and Ronald W. Goebel, Laboratory Exercises in Astronomy — Cepheid Variables and the Cosmic Distance Scale, 241
 Pasachoff, Jay M., Jeffrey L. Linsky, Bernhard Haisch, and Albert Boggess, IUE and the Search for a Lukewarm Corona, 438
 Pellegrino, Charles R., and Jesse A. Stoff, Organic Clues in Carbonaceous Meteorites, 330
 Pierce, David A., letter, 333; Project: Universe, 24
 Ruga, Lucille, poem, 245
 Russell, C. T., letter, 333
 Schmiedecke, Walter, A Simple Technique for Recording the Sun's Spectrum, 395
 Shurman, Michael M., letter, 333
 Simonsen, Erik, see Gegen, Doug

Simpson, Roger K., letter, 245
 Sinnott, Roger W., conductor, Gleanings for ATM's, 87, 185, 294, 392, 487, 584
 Siok, Stephen C., letter, 445
 Spargo, Jonathan C., letter, 445
 Sperling, Norman, book review, 73
 Examining Planet Earth, 126
 International Union of Amateur Astronomers, The, November, 1978; corrections to, 156
 Stoff, Jesse A., see Pellegrino, Charles R.
 Swenson, G. W., Jr., Antennas for Amateur Radio Interferometers, 338
 Taylor, Michael M., A Canadian Amateur's 15-inch Portable Reflector, 584
 Trimble, Virginia, book review, 279

van Paradijs, Jan, see Lewin, Walter H. G.
 Victor, Robert C., Bright Stars and Planets During Totality, 168
 Sun, Moon, and Planets This Month, 64, 166, 270, 374, 456, 550
 Vrba, Frederick J., see Loren, Robert B.
 Wadsworth, Arthur, letter, 444
 Walter, Frederick, see Zeilik, Michael
 Wisniewski, Wieslaw Z., and Harold L. Johnson, The Mystery of Vega, 4
 Young, Andrew T., letter, 444
 Zealey, William J., see Malin, David F.
 Zeilik, Michael, Douglas S. Hall, Paul A. Feldman, and Frederick Walter, The Strange RS Canum Venaticorum Binary Stars, 132

Departments and Features

Amateur Astronomers —

Amateur and Education Meetings This Spring, 256
 Amateur Briefs, 48, 155, 259, 363, 578
 Astronomical Conventions This Summer, 361
 Astronomy in the Decorative Arts — I, 577
 Brazilian Observatory's 30th Anniversary, A, 154
 Exploring Astronomy for Youth, 253
 International Union of Amateur Astronomers, The, November, 1978; corrections to, 156
 Last-Minute Eclipse Notes, 149
 NASA Educator, 578
 North America's Partial Eclipse, 480
 Prominent California Amateur, 578
 Two New Movies, 155
 Variable Star Observers Meet, 42

Astronomical Scrapbook —

Diary of an Early American Amateur, The, 545
 Some British Amateurs of the Golden Age, 342
 Star Photographs of Lewis M. Rutherford, The, 141

Books and the Sky —

Activities in Astronomy, Darrel B. Hoff, Linda J. Kelsey, and John S. Neff, 573
 Astronaut Observations from the Apollo-Soyuz Mission, Farouk El-Baz, 388
 Astronomical Papers Dedicated to Bengt Strömgren, A. Reiz and T. Andersen, editors, 476
 Atlas of Deep-Sky Splendors, Hans Vehrenberg, 179
 Burnham's Celestial Handbook, Vols. 1, 2, and 3, Robert Burnham, Jr., 570
 Comets, Asteroids, Meteorites, A. H. Delsemme, editor, 173
 Cosmic Evolution, George B. Field, Gerrit L. Verschuur, and Cyril Ponnamperuma, 381
 Crystals in the Sky, Travis Hudson and Ernest Underhay, 473
 Double Stars, Wulff D. Heintz, 569
 Guide to Mars, Patrick Moore, 383
 Guide to the Literature of Astronomy, A. Robert A. Seal, 73
 Handbook of Quasistellar and BL Lacertae Objects, A. Eric R. Craine, 75
 Handbook of Radio Sources, A. A. G. Pacholczyk, 176
 Handbook of Solar Flare Monitoring & Propagation Forecasting, The, Carl M. Chernan, 282
 Illustrated Glossary for Solar and Solar-Terrestrial Physics, A. Bruzek and C. J. Durrant, editors, 77
 Investigations in Observational Astronomy, Wayne A. Christianson, Ronald H. Kaitchuk, and Michelle D. Kaitchuk, 573
 Journey Through the Universe, Thomas L. Swihart, 381
 Man and the Stars, Hanbury Brown, 385
 New Astronomy, The, Paul Murdin and Lesley Murdin, 287
 Orbital Motion, A. E. Roy, 284
 Project Daedalus, A. Bond and others, 471
 Restless Universe, The, Harry L. Shipman, 381
 Road to the Stars, The, Iain Nicolson, 471
 Sky and Sextant, John P. Budlong, 474
 Skylab, Classroom in Space, Lee B. Summerlin, editor, 72

Skylab Explores the Earth, NASA Lyndon B. Johnson Space Center, 79
 Stars: Their Birth, Life, and Death, Iosif S. Shklovskii, 279

Celestial Calendar —

Asteroid Occultation, 169
 Bright Stars and Planets During Totality, 168
 Conjunctions of Asteroids with Bright Stars, 376
 Dipperful of Fun, A, 552
 Eclipses of Rhea, 276
 Meteors, 377, 459, 553
 Minima of Algol, 68, 170, 276, 378, 459, 553
 Moon Phases and Distances, 68, 170, 276, 378, 459, 553
 1979 Guide to the Not-So-Conspicuous Planets, A, 66
 R Draconis: A Fine Circumpolar Variable, 458
 Some Notes for Occultation Observers, 272
 Two Occultations in April, 377
 Variable Star Maxima, 68, 170, 276, 378, 458, 553
 see also Sun, Moon, and Planets This Month

Comet Digest, 32, 145, 246, 343, 445, 526

Front-cover photographs —

Boston Sunset, 513
 Cape Cod from Landsat, 113
 Homing in on Jupiter, 209
 Jupiter, Io, and Europa, 417
 On the Plains of San Augustin, 1
 Rho Ophiuchi Nebula, 321

Gleanings for ATM's —

Almost a Null Test for Paraboloids, 92
 Altazimuth Observing Chair for Binoculars, An, 487
 Aluminized Mylar as a Flux Collector, 489
 Canadian Amateur's 15-inch Portable Reflector, A, 584
 Driving a Telescope with Wood Putty, 392
 Experiments with Vacuum-Formed Mirrors, 491
 Hastings-Byrne 6¼-inch Refractor, The, 294
 Portable 16-inch of Great Steadiness, A, 87
 Recording the Time on Astronomical Photographs, 192
 Report of a Belgian Telescope Maker, 185
 Simple Technique for Recording the Sun's Spectrum, A, 395

In the Current Journals, 11, 124, 247, 334, 428, 540

Letters, 33, 245, 333, 444

New Books Received, 84, 181, 289, 389, 478, 575

News Notes —

AAS Moves to Washington, 334
 Alpha and Proxima Centauri, 249
 Alpha Capricornid Meteors, The, 248
 Barnard's Star Updated, 247
 Canadian Astronomer, 430
 Catalogue of Cometary Orbits, 334
 Cyclonic Storm on Mars, 124
 Diameter of Aldebaran, 429
 Einstein: A Centenary Exhibition, 428
 Einstein in Orbit, 12
 Emission Lines in the Spectrum of Vega? 124
 Enlargement of the Earth's Shadow at Lunar Eclipses, 12

First Glimpse of Uranus' Rings, December, 1978; correction to, 170

Galileo Galilei, 334
 Galileo's Drawings of the Moon, 222
 Glass Eye for the Space Telescope, 125
 Great Toba Eruption, The, 124
 IAU Membership, 248
 Implications of an Orbiting Solar Power Station, 125
 Italian Solar Expert, 249
 Japanese Astronomer, 428
 Margaret Harwood, 430
 Mass Loss from Red Stars, 12
 Moons of Mars, The, 11
 Morasko Meteorite Craters, 335
 NASA to Japan: "Just in Case . . ." 335
 Nature of MWC 349, The, 541
 New Eclipsing Variable, A, 429
 New Saturnian Satellites? 430
 Nucleus of NGC 1275, The, 334
 155 Pulsars, 249
 Pallas Surveyed, 428
 Past and Future Orbit of Chiron, 249
 Precise Positions of Mercury by Radio, 428
 Precision Radial Velocities of Stars, 247
 Supernova in Messier 100, 540
 Supernova in NGC 3913, 540
 30,760 Galaxies, 541
 Thomas Johnson Honored, 541
 Toronto, 334
 Two French Astronomers, 541
 Unusual Variable Star, 335
 Variability of R Puppi, The, 11
 Variable Stars in the Sculptor Dwarf Galaxy, 11
 Veneras on Venus, 123
 Visual Binary Star Alpha Fornacis, The, 124
 What Is Going On in SS 433? 429
 X-Rays from Kepler's Supernova, 430
 X-Rays from the Orion Trapezium, 335

Observer's Page —

Airborne Eclipse Observing and the Moon's Shadow, 495
 Astrophotography: Planning Pays Off, 197
 Deep-Sky Wonders, 105, 203, 314, 410, 505, 601
 February 26th Solar Eclipse: A Supplement, 592
 Metric-English Equivalents, 108, 205, 316, 412, 507, 603
 Observed Eclipses of Jupiter's Satellites, 309
 Occultation Highlights for the Year 1979, 97
 Partial Lunar Eclipse in March, 600
 Pluto Passes the Galaxy NGC 5248, 595
 Sunspot Numbers, 103, 204, 311, 411, 506, 602
 'Twas the Morning After Christmas . . . , 303
 Unusual Pages from the Observers' Notebook, 401
 Radio Waves, 35
 Rambling Through . . . (current month) Skies, 54, 160, 264, 368, 464, 558
 Southern Stars, 63, 267, 467
 Stars for . . . (current month), 54, 160, 264, 368, 464, 558
 Sun, Moon, and Planets This Month, 64, 166, 270, 374, 456, 550
 Jupiter's Satellites, 65, 167, 270, 374, 456, 550

Selected Topics and Celestial Objects

This listing is not intended to be exhaustive and does not supplant the other parts of the index. For example, material in such regular features as Books and the Sky is ordinarily indexed only under the Departments and Features section.

- Afro-American skyline: 33
- Amateur astronomers: AAVSO, 42; directories of societies, 49, 156; Messier marathon, 315; Nairobi, Kenya, 363
- Analemma: photographic, 536
- Art, astronomical: decorative, 577; Henk Pander's paintings, 7, 445
- Artificial satellites and spacecraft: Ariane, 217; HEAO 2 (Einstein), 12, 527; IUE, 438; Landsats, 126; Orbiting Solar Power Stations, 125, 444; Pioneer Venus 1 and 2, 119; Spacelab, 217; Space Shuttle, 335, 542; Veneras, 123, 236; Vikings, 238; Voyager 1, 236, 346, 516; Voyager 2, 236
- Asteroids: 2 Pallas, 428; 2060 Chiron, 249; 2104 Toronto, 334
- Astronomy education: Boy Scouts of America, 253; Committee of 10, 212; Concord, N. H., conference, 19; laboratory exercise, 241; movies, 155; TV series, 25, 333
- Clusters: Open — M44, 203; M46, 235; M67, 204; NGC 1245, 106. Globular — Omega Centauri, 505; M53, 505; NGC 5053, 505; NGC 6624, 446
- Comets: Encke's and Tunguska event, 245; *International Comet Quarterly*, 445; ones found in 1978, 246; orbit catalogue, 334; 1702a, 545; P/Schwassmann-Wachmann 1, 1925 II, 32, 246, 343, 445, 526; P/Schwassmann-Wachmann 3, 1930 VI, 526; Seki-Lines, 1962 III, 343; P/Ashbrook-Jackson, 1977g, 32, 145, 246; P/Comas Sola, 1977n, 32, 145, 246; Meier, 1978f, 32, 145, 246, 343; P/Haneda-Campos, 1978j, 32; Machholz, 1978l, 32; Seargent, 1978m, 33, 145; P/Denning-Fujikawa, 1978n, 33
- Constellations: poetry, 464; pole stars, 558; pronunciation of names, 160; Ursa Major, 464, 552; Ursa Minor, 466
- Cosmology: fate of universe, 13
- Double and multiple stars: Alpha and Proxima Centauri, 249; Alpha Fornacis, 124; Castor, 203; spectroscopic binaries, 145
- Earth: crepuscular rays, 409; Landsat pictures, 126; mountain shadows, 407; Toba eruption, 124
- Eclipses: colonial, 545; February 29, 1504, lunar, 116; June 16, 1806, solar, 117; March 24, 1978, lunar, 12, 333; September 16, 1978, lunar, 12; February 26, 1979, solar, 36, 149, 168, 344, 401, 431, 480, 495, 592; March 13, 1979, lunar, 600
- Galaxies: Coma cluster, 13; in Sculptor, 541; Sculptor dwarf, 11; Small Magellanic Cloud, 241; X-ray observations, 527; M31, 202, 570; M64, 505; M81, 26; M82, 26; NGC 253, 358; NGC 1169, 106; NGC 1275, 334; NGC 1316, 359; NGC 2672, 203; NGC 4027, 411; NGC 4038, 410; NGC 4565, 197; NGC 4627, 191; NGC 4631, 191; NGC 4656, 191; NGC 4712, 506; NGC 4725, 506; NGC 4747, 506; NGC 5005, 315; NGC 5033, 315; NGC 5248, 595; NGC 5377, 315; NGC 6503, 601; NGC 6643, 601; NGC 7217, 107; NGC 7479, 107
- History: astrophotography, 141; Barnard and comet-seeker hoax, 420; Columbus, Christopher, 116; Committee of 10, 212; Einstein, A., 428; Galileo, 34, 334; Goodricke, J., 34; Hastings-Byrne 6¼-inch refractor, 294; Paris Observatory, 239; Rutherford, L. M., 141; Sewall, S., 545; Shawnee Prophet, 117; Tesla, N., and radio astronomy, 333; Wrottesley, Lord, 342
- Image processing: 21
- International Astronomical Union: 248
- Interstellar clouds: 521
- Jupiter: findings from Voyager, 346 (correction, 445), 423, 516; mutual phenomena of satellites, 403; observations of satellite eclipses, 309; satellite close-ups, 423, 516; Voyager mission, 238
- License plates, astronomical: 535
- Mars: cyclonic storm, 124; photograph, 294; satellites, 11; Viking update, 238
- Mercury: radio positions, 428
- Meteorites: amino acids in, 330; Morasko, Poland, 335; twin craters, 333
- Meteors: Alpha Capricornid, 248; spectra, 21
- Milky Way: interstellar material, 347, 521; photograph, 199
- Moon: airplane crossing, 404; Galileo drawings, 222; young crescents, 403
- Music: Galileo opera, 334
- Nebulae: dark, 247; nebula filters, 231. Diffuse — Barnard's loop, 200; Eta Carinae, 354; Horsehead, 107; Rosette, 200; M1, 106, 529; M6, 199; M7, 199; M8, 199, 201, 357, 443; M16, 188; M17, 201; M20, 199, 201; M42 (Orion), 90, 107, 200, 234, 351, 356; NGC 1333, 522; NGC 6992, 187. Planetary — M76, 105; M97, 188; NGC 4361, 410; NGC 6543, 601; NGC 7027, 352; NGC 7293, 392
- Novae and supernovae: Nova Cygni 1978, 33; SN 1604, 430; SN in M100, 540; SN in 3913, 540; X-rays from supernova remnants, 430, 527
- Observatories: Monterey, Calif. (MIRA), 223, 444; Mount Mégantic, Que., 215; Paris, France, 239; Zelenchukskaya, U.S.S.R., 324
- Observatories, amateur and public: Campinas, Brazil, 154; Ypres, Belgium, 185
- Occultations: mutual — of planets, 220; Venus by moon, 303
- Personal notes: Burke-Gaffney, Rev. M. W., 430; Brun, A., 541; Couder, A., 541; Gregory, A. B., 578; Hagihara, Y., 428; Harwood, M., 430; Johnson, J., 541; Marshall, C. D., 49; Righini, G., 249; Rohr, H., 363; Texereau, J., 239; Tiemann, R. S., 578; Wightman, K. W., 363
- Photography: hints, 197; history, 141; nebula filters, 231; recording time on photographs, 192; unsharp masking, 355 (correction, 445)
- Planetariums: Hialeah, Fla., 336
- Planets: mutual occultations, 220
- Pluto: and NGC 5248, 595
- Pulsars: binary, 146; new, 249; Vela, 529
- Quasars: X-ray observations, 527
- Radio astronomy: amateur notes, 35; antennas for amateur interferometers, 338; Mercury positions, 428; NGC 1275, 334; RATAN-600 telescope, 324; RS Canum Venaticorum stars, 132; Very Large Array, 7
- Relativity, general: tested, 146
- Space (see Artificial satellites and spacecraft)
- Stars: Aldebaran diameter, 429; Alpha and Proxima Centauri, 249; Barnard's, 247; coronas, 438; formation, 521; mass loss, 12; MWC 349, 541; parallax proposal, 33; radial velocities, 142, 247; SS 433 mystery, 429; Vega, 4, 124
- Sun: photographing spectrum, 395
- Sundials: Bloomington, Ind., 138; Oberlin, Ohio, 245
- Telescopes and telescope making: chair for binoculars, 487; doubled images, 35; inexpensive flux collector, 489; nebula filters, 231; null test, 92; objective prism, 142; recording time on photographs, 192; simple solar spectrograph, 395; vacuum-formed mirrors, 491; 6¼-inch Hastings-Byrne refractor, 294; 10-inch all-wood, 392; 10-inch experimental, 491; 15-inch portable, 584; 16-inch Belgian, 185; 16-inch portable, 87; 2.4-meter space, 125
- Ultraviolet astronomy: IUE satellite, 438
- Universe: ultimate fate, 13
- Variable stars: HR 1099, 134; in Sculptor galaxy, 11; in Small Magellanic Cloud, 241; new eclipsing, 429; RS Canum Venaticorum, 132, 444; RW Coronae Australis, 145; SS Cygni, 33; R Draconis, 458; Alpha Lyrae, 4; RZ Piscium, 335; R Puppis, 11
- Venus: Pioneer Venus results, 119, 333; Venera results, 123, 237
- X-ray astronomy: bursters, 446; HEAO 2 (Einstein), 12, 527; Kepler's supernova, 430; Orion Trapezium, 335; RS Canum Venaticorum, 132

I
N
O
M
K

Titles

- Aids for the Calculating Amateur Astronomer, 25
 Amateur Astronomers Convene in Portland, *Kenneth Wilson*, 407
 Apollo Remembered: Conference Notes from Houston, *Thornton Page*, 28
 Blues for Apollo, *David Pelinka*, 503
 Crossley Reflector, The: A Centennial Review, *Remington P. S. Stone*, I, 307; II, 396
 Did the Solar System Start with a Bang? *Sydney W. Falk* and *David N. Schramm*, 18
 Disappearances of Saturn's Rings, 1600-2100, *Richard E. Schmidt*, 500
 Does Anyone Understand SS 433? *Dennis Overbye*, 510
 Emission Nebula IC 1396 in Cepheus, *The*, 129
 Exploring the Southern Sky, *Dennis Overbye*, 30
 Famous Eclipse of June 8, 1918, *The*, *Katherine Bracher*, 411
 Fate of a Kansas Meteorite Crater, *The*, *Ellis Peck*, 126
 First Report from the IAU, 312
 Glimpses of Ancient Japanese Astronomy, *Kuniji Saito*, 108
 Highlights from Riverside 1979, *Roger W. Sinnott*, 110
 Laboratory Exercises in Astronomy — The Rotation of Mercury, *Darrel B. Hoff* and *Gary Schmidt*, 219
 Measuring Diameters of Stars, *David S. Evans*, *Thomas G. Barnes*, and *Claud H. Lacy*, 130
 Mutual Occultations of Planets: 1557 to 2230, *Steven C. Albers*, March, 1979; correction to, 137
 NASA's Search for the Solar Connection, *Robert W. Chapman*, I, 118; II, 223
 New Look at Kitt Peak, *A. Jacquelyn Elliott* and *Diane Dean Dittmore*, 314
 New Look at Supernova Remnants, *A. Kurt W. Weiler*, 414
 Next February's Total Solar Eclipse, 4
 Observatories for Students and Club Members, 526
 Observing Saturn from Pioneer 11, *Peter H. Smith* and *Lyn R. Dose*, 405
 Ohio Astronomer, *An*, *Freeman D. Miller*, 117
 On a Mountain in Hawaii, 319
 Palomar's Hale Telescope: The First 30 Years, *J. B. Oke*, 505
 Peering Ahead in Astronomy, *Thomas R. McDonough*, 518
 Pioneers' Venus: More than Fire and Brimstone, *J. Kelly Beatty*, 13
 Radar Imagery of Arizona's Meteor Crater, *Roy Pietsch* and *William A. Rasco, Sr.*, 204
 Rendezvous with Saturn, *J. Kelly Beatty*, 401
 Report from Breezy Hill, *George T. Keene*, 303
 R.F. Converter for Amateur Radio Astronomy, *An*, *G. W. Swenson, Jr.*, and *S. J. Franke*, 422
 Scientific Notes from the IAU at Montreal, 419
 Sir Thomas Brisbane Planetarium, *The*, *Jeff Ryder*, 217
 Six New Eyes Peer from Mount Hopkins, *James Cornell*, 23
 Space-Age Spectroscopy with Optical Heterodynes, *Ronald W. Goebel*, 300
 Starlight and Snowballs, *Ben Mayer*, 534
 Starlight in My Pocket, *Ben Mayer*, 326
 Student Projects 1978-79, *Norman Sperling*, 228
 Touring the Jai Singh Observatories, *Ben Mayer*, 6
 Voyager's Encore Performance, *J. Kelly Beatty*, 206
 Warming Up for the Solar Maximum Year, *David M. Rust*, 315
 What's New at "Sky and Telescope," *William E. Shavercross*, 524
 When Comets Were Discovered from Newark, *Norman Sperling*, 135

Authors

- Albers, Steven C.*, Mutual Occultations of Planets: 1557 to 2230, March, 1979; correction to, 137
Allen, David A., book review, 65
Allen, Deborah, book review, 257
Aller, Lawrence H., book review, 163
Annett, Clarence H., letter, 329
Ashbrook, Joseph, *Astronomical Scrapbook*, 116, 324, 523
 book review, 456
 Observed Eclipses of Jupiter's Satellites, 377
Astley, Malcolm, letter, 16
Baldinelli, Luigi, and *A. Maitan*, observatory report, 529
Barnes, Thomas G., see *Evans, David S.*
Beatty, J. Kelly, Pioneers' Venus: More than Fire and Brimstone, 13
 Rendezvous with Saturn, 401
 Voyager's Encore Performance, 206
Bennett, Christopher A., letter, 17
Benson, Harold M., Mounting a 6-inch Tri-Schief-spiegel, 270
Bortle, John E., *Comet Digest*, 29, 125, 222, 330, 429, 517
Both, Ernst E., book review, 259
Bracher, Katherine, *The Famous Eclipse of June 8, 1918*, 411
Brooks, Daniel E., letter, 329
Brookbridge, Geoffrey, book review, 62
Buta, Ronald J., Observing Galaxies Visually — I, 482; II, 595
Butler, Mary Jane, Groundbreaking with a Bang, 265
Carle, Jackson T., A Simple Polishing Test, 180
Chapman, Robert W., NASA's Search for the Solar Connection — I, 118; II, 223
Chartrand, Mark R., III, book review, 60
Ciupik, Larry, and *Nelma Garcia*, observatory report, 527
Cornell, James, Six New Eyes Peer from Mount Hopkins, 23
Daniel, Christopher St. J. H., book review, 562
di Cicco, Dennis, September's Total Lunar Eclipse: A Pictorial Record, 590
Dittmore, Diane Dean, see *Elliott, Jacquelyn*
Dose, Lyn R., see *Smith, Peter H.*
Duke, Jimmy, observatory report, 527
Dunham, David W., The Year's End Occultation of Aldebaran, 544
Dutton, Denis, book review, 66
Elliott, Jacquelyn, and *Diane Dean Dittmore*, A New Look at Kitt Peak, 314
Espenak, Fred, Jr., Isophotes of the Sun's Corona, 96
Evans, David S., letter, 426
Evans, David S., *Thomas G. Barnes*, and *Claud H. Lacy*, Measuring Diameters of Stars, 130
Faber, Sandra M., book review, 454
Falk, Sydney W., and *David N. Schramm*, Did the Solar System Start with a Bang? 18
Franke, S. J., see *Swenson, G. W., Jr.*
Garcia, Nelma, see *Ciupik, Larry*
Germany, Septimus S., A Hindle-Type Grinding Machine for Large Mirrors, 367
Gingerich, Owen, book review, 63
Goebel, Ronald W., Space-Age Spectroscopy with Optical Heterodynes, 300
Goldstein, Alan, amateur convention report, 464
Gorski, Alan B., Enhancing Astronomical Photographs, 184
Gursky, Herbert, letter, 115
Gyulbudaghian, Armen L., letter, 115
Hale, Arthur H., A 6-inch Binocular with Tilted Primary Mirrors, 582
Hansen, Todd, letter, 115
Harsh, Nolen, observatory report, 528
Hartmann, William K., book review, 353
Hillenbrand, Robert, letter, 17
Hoff, Darrel B., and *Gary Schmidt*, Laboratory Exercises in Astronomy — The Rotation of Mercury, 219
Honeycutt, Jim, observatory report, 528
Houston, Walter Scott, Deep-Sky Wonders, 97, 193, 289, 387, 490, 601
Howse, Derek, letter, 234
Hoyt, William Graves, book review, 359
Huchra, John P., book review, 351
Irwin, John B., book reviews, 160, 564
Johnson, James L., letter, 17
Keene, George T., Report from Breezy Hill, 303
Kimmel, Bob, see *Yuill, Lester*
Knight, Joshua W., letter, 115
Kracht, Rainer, letter, 16
Lacy, Claud H., see *Evans, David S.*
Lammerer, Max, German Amateur's Solar Telescopes, 78
Lamprecht, Vera, letter, 115
Lemay, Damien, letter, 426
Levine, Randolph H., book review, 354
Lewin, Walter H. G., and *Jan van Paradijs*, letter, 234
Lovi, George, letter, 16
 Rambling Through... (current month) Skies, 52, 152, 248, 344, 444, 550
Lunsford, Danny, letter, 329
Maitan, A., see *Baldinelli, Luigi*
Maley, Paul D., Star To Be Occulted by an Asteroid, 437
Markowitz, William, book review, 159
Mayer, Ben, Starlight and Snowballs, 534
 Starlight in My Pocket, 326
 Touring the Jai Singh Observatories, 6
McDonough, Thomas R., Peering Ahead in Astronomy, 518
Meeus, Jean, letter, 517
Miller, Freeman D., An Ohio Astronomer, 117
Minton, R. B., A Combination Photometer and Telescope Guider, 83
Nicolson, Iain, letter, 234
Oke, J. B., Palomar's Hale Telescope: The First 30 Years, 505
Overbye, Dennis, Does Anyone Understand SS 433?, 510
 Exploring the Southern Sky, 30
Page, Thornton, Apollo Remembered: Conference Notes from Houston, 28
Palmer, E. Samuel, letter, 115
Pasachoff, Jay M., letter, 17
Peck, Ellis, The Fate of a Kansas Meteorite Crater, 126
Peery, Richard, amateur convention report, 464
Peery, Richard, and *Roxanne Peery*, observatory report, 528

Peery, Roxanne, see Peery, Richard
 Pelinka, David, Blues for Apollo, 503
 Pietsch, Roy, and William A. Rasco, Sr., Radar Imagery of Arizona's Meteor Crater, 204
 Piip, Ants, letter, 330
 Prieto, Maria Luisa, amateur convention report, 467
 Rainge, Roland, letter, 115
 Rasco, William A., Sr., see Pietsch, Roy
 Rathbun, Donald, letter, 426
 Risch, Robert, see Vickery, James
 Roth, Roger, letter, 16
 Rugelis, Susan, amateur convention report, 467
 Rust, David M., Warming Up for the Solar Maximum Year, 315
 Ryder, Jeff, The Sir Thomas Brisbane Planetarium, 217
 Saito, Kuniji, Glimpses of Ancient Japanese Astronomy, 108
 Scarr, Leonard W., D.V.M., Notes on Stargazing Through Mylar, 274
 Schmidt, Gary, see Hoff, Darrel B.

Schmidt, Richard E., Disappearances of Saturn's Rings, 1600-2100, 500
 Schneider, Arthur, observatory report, 526
 Schramm, David N., see Falk, Sydney W.
 Schwaar, Pierre Y., A 16½-inch Reflector with a Porthole-Glass Mirror, 175
 Shawcross, William E., What's New at "Sky and Telescope," 524
 Sinnott, Roger W., conductor, Gleanings for ATM's, 78, 175, 270, 367, 473, 582
 Highlights from Riverside 1979, 110
 Smith, Peter H., and Lyn R. Doose, Observing Saturn from Pioneer 11, 405
 Sperling, Norman, amateur convention report, 464
 Astronomy Day 1979: The Biggest Yet, 167
 Student Projects 1978-79, 228
 When Comets Were Discovered from Newark, 135
 Stone, Remington P. S., The Crossley Reflector: A Centennial Review — I, 307; II, 396
 Swenson, G. W., Jr., and S. J. Franke, An R.F. Converter for Amateur Radio Astronomy, 422

Turco, Edward, Making an Aplanatic 4-inch Telescope, 473
 van Paradijs, Jan, see Lewin, Walter H. G.
 Van Zandt, Rollin P., book review, 350
 Vickery, James, and R. Risch, observatory report, 526
 Victor, Robert C., Sun, Moon, and Planets This Month, 42, 142, 238, 334, 434, 542
 Unusual Gathering of the Superior Planets, 336
 Venus in the Evening Sky, 436
 Vsekhsvyatskij, S., letter, 16
 Wallner, E. P., letter, 234
 Watts, Raymond N., Jr., book review, 261
 Weiler, Kurt W., A New Look at Supernova Remnants, 414
 Westfall, John E., book review, 350
 White, John, book review, 452
 Wilson, Kenneth, Amateur Astronomers Convene in Portland, 407
 Yeomans, Donald K., letter, 426
 Yuill, Lester, and Bob Kimmel, Making Polaroid Color Prints from Slides, 87

Departments and Features

Amateur Astronomers —

Amateur Briefs, 74, 169, 363, 575
 Amateur's Asteroid, An, 171
 Association of Astronomy Educators, 467
 Astronomy Day 1979: The Biggest Yet, 167
 Astronomy in the Decorative Arts — II, 72
 California Convention, 267
 Groundbreaking with a Bang, 265
 Harrisburg and Winnipeg Clubs Cope with Emergencies, 264
 Scope for a Skywalker, A, 362
 Some Amateur Conventions of Note, 464
 This Fall's Astronomical Gatherings, 365
 Through a Glass Colorfully, 575

Astronomical Scrapbook —

E. E. Barnard and the Globular Clusters, 523
 Next Transit of Venus, The, 324
 Story of the Bond Zones, The, 116

Books and the Sky —

Annual Review of Astronomy and Astrophysics, Vol. 16, Geoffrey Burbidge, David Layzer, and John G. Phillips, editors, 160
 Applications of Early Astronomical Records, F. Richard Stephenson and David H. Clark, 354
 Beginning of the Long Dash, The, Malcolm M. Thomson, 159
 ESO Conference: Optical Telescopes of the Future, F. Pacini, W. Richter, and R. N. Wilson, editors, 564
 Exploration of the Solar System, William J. Kaufmann, III, 350
 Galileo at Work, Stillman Drake, 63
 God and the Astronomers, Robert Jastrow, 66
 Great Sundial Cutout Book, The, Robert Adzema and Mable Jones, 562
 Large Scale Structure of the Universe, The, M. S. Longair and J. Einasto, editors, 351
 Mars, Percival Lowell, 359
 Martian Landscape, The, Viking Lander Imaging Team, 257
 Messier Album, The, John H. Mallas and Evered Kreimer, 65
 Murmurs of Earth: The Voyager Interstellar Record, Carl Sagan, F. D. Drake, Ann Druyan, Timothy Ferris, Jon Lomberg, and Linda Salzman Sagan, 452
 Mysterious Universe, William R. Corliss, compiler, 456
 New Concise Atlas of the Universe, Patrick Moore, 350
 Panoptikum der Sterne, Max Waldmeier, 259
 Planetary Encounters, Robert M. Powers, 261
 Planetary Nebulae, Yervant Terzian, editor, 163
 Radio Astronomy and Cosmology, David L. Jauncey, editor, 62
 Space Art, Ron Miller, compiler, 60
 Structure and Properties of Nearby Galaxies, Ely M. Berkhuysen and Richard Wielebinski, editors, 454

Structure of Planets, The, G. H. A. Cole, 353

Celestial Calendar —

Meteors, 338, 437, 545
 Minima of Algol, 46, 146, 243, 338, 438, 545
 Moon Phases and Distances, 46, 146, 243, 338, 438, 545
 Occultation by Doris, 545
 September: A Special Month for Occultations, 240
 September Occultations, 145
 September's Total Lunar Eclipse, 144 (correction, 602)
 Seven Meteor Showers in July-August, 44
 Star To Be Occulted by an Asteroid, 437
 Unusual Gathering of the Superior Planets, 336
 Variable Star Maxima, 46, 146, 243, 338, 438, 545
 Venus in the Evening Sky, 436
 Year's End Occultation of Aldebaran, The, 544
 see also Sun, Moon, and Planets This Month

Comet Digest, 29, 125, 222, 330, 429, 517

Front-cover photographs —

Crab Nebula, 393
 Eclipse at Saturn, 1
 Jovian Computer Simulation, 201
 Sun Treader, 105
 Swap Table at Stellafane, 297
 Unusual Lunar Eclipse, 497

Gleanings for ATM's —

Burton A. Norman Dies, 372
 Combination Photometer and Telescope Guider, A, 83
 German Amateur's Solar Telescopes, 78
 Hindle-Type Grinding Machine for Large Mirrors, A, 367
 Making an Aplanatic 4-inch Telescope, 473
 Mounting a 6-inch Tri-Schiefspiegler, 270
 Notes on Stargazing Through Mylar, 274
 Porter's Reverie, 371
 Riverside Proceedings, 372
 Simple Polishing Test, A, 180
 6-inch Binocular with Tilted Primary Mirrors, A, 582
 16½-inch Reflector with a Porthole-Glass Mirror, A, 175

In the Current Journals, 232, 323, 532

Letters, 16, 115, 234, 329, 426, 517

New Books Received, 67, 165, 263, 361, 457, 568

News Notes —

Ammonia in Other Galaxies, 123
 Archaeoastronomy, 429
 Bhaskara, 324
 Case of the Double Quasar, The, 427
 Cassiopeia A: A Black Hole? 125
 Cygnus X-1 and the Supernova of A.D. 1408, 323
 Decade of Moon Rocks, A, 11
 Double Star Observer, 137
 Ephemerides of Minor Planets for 1980, 533
 Fourth Dominion Astronomer, 232

Guest Investigators at the Hale Observatories, 11

Halley's Comet: Past, Present, and Future, 232
 Large Telescopes in Hawaii, 532
 Length of the Martian Day, 533
 Loose Clusterings of Stars, 123
 Measuring the Solar Rotation, 124
 Mexican Meteorite, 123
 Minor Planet Observer, 232 (correction, 429)
 Mission Beyond the Planets, A, 533
 Motions of Stars in Messier 3, 532
 Moving a Schmidt Telescope, 123
 Music of the Spheres, 124
 New Galaxy of the Local Group? 302
 New Jovian Moon? 532
 New Mars Atlas, 428
 New Nearby Galaxy, 428
 New Saturnian Moons? 532
 Nova Vulpeculae 1979, 11
 Observing Time on the NASA Infrared Telescope, 324

Optical and Infrared Telescopes for the 1990's, 124
 Pioneer Update, 232
 Rotation of Venus, The, 232
 Searching for Nonsolar Planets, 123
 70 Ophiuchi, 429
 Soviet Moon Map, 233
 Spectrum of Procyon, 427
 Star Clusters and Their Decay, 11
 Star Position Expert, 12
 Supernova in Messier 100, The, 12
 Variable Star Notes, 323

Observer's Page —

Amateurs Record a Supernova in M100, 90
 Center of M31, The, 187
 Deep-Sky Wonders, 97, 193, 289, 387, 490, 601
 Enhancing Astronomical Photographs, 184
 Fish-eye View of the Summer Sky, A, 288
 Isophotes of the Sun's Corona, 96
 Items from the Observers' Notebook, 386 (correction, 602)
 Making Polaroid Color Prints from Slides, 87
 Metric-English Equivalents, 99, 195, 291, 389, 492, 603
 Observed Eclipses of Jupiter's Satellites, 377
 Observing Galaxies Visually — I, 482; II, 595
 Photographs from the Observers' Notebook, 192
 September's Total Lunar Eclipse: A Pictorial Record, 590
 Some Notes on Polar Alignment, 280
 Sunspot Numbers, 98, 194, 290, 388, 491, 602
 Rambling Through... (current month) Skies, 52, 152, 248, 344, 444, 550
 Southern Stars, 55, 251, 447
 Stars for... (current month), 52, 152, 248, 344, 444, 550
 Sun, Moon, and Planets This Month, 42, 142, 238, 334, 434, 542
 Jupiter's Satellites, 238, 334, 434, 542

